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EXAMINER

KLIMOWICZ, WILLIAM JOSEPH

ART UNIT	PAPER NUMBER
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2627

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/643,265

Applicant(s)

HIRANO ET AL.

Examiner

William J. Klimowicz

Art Unit

2627

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Status

Claims 1-8 are currently pending, of which, claims 1, 4, 5 and 8 are independent.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 4 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As per amended claim 4, the recitation of "an opening suitable for exposing a protruding portion of said slider" and amended claim 8 "and wherein a portion of said slider protrudes from said shroud such that said portion of said slider is not surrounded by said shroud" is inconsistent with the claimed embodiment. More specifically, claim 4 as well as claim 8 are drawn to the "moving-head-type microactuator" (FIG. 11 of Applicants' disclosure) having a plate portion type shield. It is indefinite as to how the limitation of "an opening suitable for exposing a protruding portion of said slider" (claim 4) or "and wherein a portion of said slider protrudes from said shroud such that said portion of said slider is not surrounded by said shroud" (claim 8) can be read on the embodiment of the plate portion attached to the slider.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koshikawa et al. (JP 03095717 A) in view of Zhang et al. (US 6,396,667 B1).

As per claim 1 and 5, Koshikawa et al. (JP 03095717 A) discloses a disk drive (e.g., see FIG. 4(a, b)) and an airflow shroud (2) for a slider (3), comprising: a frame portion (2) having an opening (see FIGS. 4 and 5, bottom facing disk (6)) *suitable* (capable) for exposing a protruding portion of a slider (3) for a disk drive (e.g., see the embodiments disclosing such a protruding portion, including FIG. 1, , FIG. 2(b), FIG. 6 and FIG. 7(b)), the frame portion (2) surrounding the slider (3); and an attachment portion (e.g., top surface of (2) - see FIG. 3(a) and FIG. 3(b) adapted for attachment to a suspension load beam (8) of a disk drive (e.g., see, *inter alia*, FIGS. 3-5), wherein the frame portion (2) is configured to not surround the suspension load beam (8).

Additionally, as per claim 5, the airflow shroud including a frame portion (2) having an opening suitable (opening at bottom of shroud which exposes an ABS of slider, i.e., the surface of the slider that faces the disk) for exposing a portion of a slider (e.g., ABS portion of slider facing the disk) for the disk drive, the frame portion (2) surrounding the slider (3), wherein said

Art Unit: 2627

airflow shroud (2) does not surround said suspension load beam (8) and does not surround said portion (bottom exposed surface - ABS) of said slider.

As per claims 2 and 6, has side portions (7) forming the opening and a tapered shape between each side portion and the opening - see FIGS. 3-5 - note the tapered portions are not disclosed in the embodiment of FIGS. 1-2 of Koshikawa et al. (JP 03095717 A).

Per claim 1 and claim 5, however, Koshikawa et al. (JP 03095717 A) does not expressly disclose a moving-slider-type microactuator coupled to the slider.

Zhang et al. (US 6,396,667 B1) discloses a slider and head suspension of an analogous type disclosed by Koshikawa et al. (JP 03095717 A), but additionally expressly teaches providing a moving-slider-type microactuator (including 66, 64, 176) coupled to a slider (24) for the purpose of providing a small microactuator that advantageously allows high resolution head positioning (e.g., see, *inter alia*, COL. 1, line 39 *et. seq.*)

Given the express teachings and motivations, as espoused by Zhang et al. (US 6,396,667 B1), it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the moving-slider-type microactuator as taught by Zhang et al. (US 6,396,667 B1), to the slider of Koshikawa et al. (JP 03095717 A).

The rationale is as follows: one of ordinary skill in the art would have been motivated to provide the moving-slider-type microactuator as taught by Zhang et al. (US 6,396,667 B1), to the slider of Koshikawa et al. (JP 03095717 A) in order to provide a small microactuator that advantageously allows high resolution head positioning (e.g., see, *inter alia*, COL. 1, line 39 *et. seq.*)

Additionally, as per claims 3 and 7, Koshikawa et al. (JP 03095717 A), in combination with Zhang et al. (US 6,396,667 B1), however, remains silent as to the specific relationships set forth in claims 3 and 7, i.e., wherein between about 50 to 100 micrometers of the slider (SV) are exposed through the opening of the frame portion.

Given the teachings of Koshikawa et al. (JP 03095717 A), however, to expressly minimize turbulence effects on the transducer and its associated components, wherein only a slight portion of the air bearing slider is exposed through the opening as seen in FIG. 5b, it would have been obvious to one of ordinary skill in the art at the time of the alleged invention to provide an approximate range of the slider exposure through the opening, including the range of “about 50 to 100 micrometers of the slider” in the course of routine optimization/ experimentation and thereby obtain various standard optimized relationships including those set forth in claims 3 and 7.

That is, given the teachings of Koshikawa et al. (JP 03095717 A), however, to expressly minimize turbulence effects on the transducer and its associated components, wherein only a slight portion of the air bearing slider is exposed through the opening as seen in FIG. 5b, it would have been obvious to one of ordinary skill in the art at the time of the alleged invention to provide an approximate range of the slider exposure through the opening, including the range of “about 50 to 100 micrometers of the slider” in the course of routine optimization/ experimentation and thereby obtain various standard optimized relationships including those set forth in claims 3 and 7 in order to protect the majority of the slider from the impinging effects of turbulent air on the slider by providing a minimal exposure of the slider, e.g., “about 3 micrometers,” while also providing sufficient slider shroud protection while allowing enough the

Art Unit: 2627

of the air bearing surfaces of the slider to provide the desired floating quality, e.g., an upper range of exposure at "about 50 micrometers." Such a range of slider exposure through the frame opening of "about 50 to 100 micrometers of the slider" is considered to be within the level of ordinary skill in the art, given the teachings and suggestion of Koshikawa et al. (JP 03095717 A).

Additionally, the law is replete with cases in which when the mere difference between the claimed invention and the prior art is some range, variable or other dimensional limitation within the claims, patentability cannot be found.

It furthermore has been held in such a situation, the Applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range. *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Moreover, the instant disclosure does not set forth evidence ascribing unexpected results due to the claimed dimensions. See *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338 (Fed. Cir. 1984), which held that the dimensional limitations failed to point out a feature which performed and operated any differently from the prior art.

Claims 4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koshikawa et al. (JP 01-158605 A) in view of Mei et al. (US 6,611,399 B1).

As per claims 4 and 8, Koshikawa (JP 01-158605 A) discloses an airflow shroud capable of being used with a moving-head-type microactuator in a disk drive, comprising: a plate portion (e.g., rear portion of shroud (31)) attachable to a slider (31), and a recessed portion (e.g., window

Art Unit: 2627

within shroud (31)) corresponding to a moving-head-type microactuator of the slider, when positively coupled to such slider. adapted for attachment to a suspension load beam (8) of a disk drive (e.g., see, *inter alia*, FIGS. 3-5), wherein said load beam (16) is not surrounded by said airflow shroud; and an opening *suitable* (i.e., being capable of) exposing a protruding portion of said slider (31) - see FIG. 1 wherein the shield does not cover the exposed rails (12a, 12b).

As per claims 4 and 8, *assuming* that the limitations of claims 4 and 8 *positively* require the moving-head-type microactuator on the slider (11), Mei et al. (US 6,611,399 B1) discloses such a conventional moving-head-type microactuator.

Given the express teachings and motivations, as espoused by Mei et al. (US 6,611,399 B1), it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the moving-head-type microactuator as taught by Mei et al. (US 6,611,399 B1), with the shroud covering of Koshikawa (JP 01-158605 A).

The rationale is as follows: one of ordinary skill in the art would have been motivated to provide the moving-head-type microactuator as taught by Mei et al. (US 6,611,399 B1), with the shroud covering of Koshikawa (JP 01-158605 A), in order to allow fine-tuned vertical and lateral head displacement at the slider level, as advantageously disclosed by Mei et al. (US 6,611,399 B1), while simultaneously obstructing the convergence of leakage flux from outside of a magnetic pole associated with the slider, as espoused by Koshikawa (JP 01-158605 A).

Response to Arguments

Applicants' arguments entered into consideration on December 10, 2007 have been fully considered but they are not persuasive.

As per the rejections of claims 1-3 and 5-7 under 35 U.S.C. 103(a) as being unpatentable over Koshikawa et al. (JP 03095717 A) in view of Zhang et al. (US 6,396,667 B1), the Applicants opine at page 5 of the Response filed on December 10, 2007:

Applicants submit that Koshikawa, alone or in combination with Zhang fails to teach or suggest the feature of a portion of the slider protruding from the shroud. Particularly, Koshikawa teaches away from this claimed feature by stating in the purpose portion of the abstract "to completely cover the upper side and four sides of a head slider."

Emphasis in original.

Contrary to the Applicants' allegations, however, the facts as unambiguously evidenced by Koshikawa et al. (JP 03095717 A) in view of Zhang et al. (US 6,396,667 B1) clearly show otherwise.

Firstly, the Examiner once again points out that claim 1 is directed to an *airflow shroud*, *per se*, and *not a combination of a slider (or microactuator for that matter)* with the shroud.

However, even assuming *arguendo* that claim 1 is to be interpreted as a combination claim *requiring* the limitations of a microactuator and a slider in combination with the claimed shroud, the limitation "a frame portion having an opening *suitable for exposing* a protruding portion of a slider," (emphasis added) is merely requiring the *capability* of the shroud frame portion to expose a protruding portion of the slider. This is certainly not a positive limitation or requirement. However, even once again assuming *arguendo* that the rules of patent claim construction are contorted such that the capability requirement now becomes a positive relational requirement between a claimed shroud and a slider, the facts establish that Koshikawa et al. (JP 03095717 A) does disclose at least one embodiment showing such a protruding portion - see FIGS. 1, 2a, 2b, which disclose a shield having a flat peripheral non-ramped sides

Art Unit: 2627

of the shield (2), and wherein the air bearing slider, which must have a portion which interacts with the air rotated by the disk in order to perform its intended function (i.e., to fly above the disk surface), is shown to have slightly exposed air bearing surface. Note that in this embodiment, the shield (2) is non-ramped and thus cannot act in concert with the slider to fly. Contrast this with *other* embodiments of Koshikawa et al. (JP 03095717 A) (e.g., FIGS. 3a, b, 4a, b, 5a, b), wherein an aerodynamically ramped portion (7) is provided to cause the shield and slider to fly, such that the slider is not expressly required to protrude from the shield toward the disk, although certainly, nothing would preclude it from doing so.

Turning now to the Applicants' contention that Koshikawa et al. (JP 03095717 A) somehow teaches away from providing a protruding portion, wherein Applicants allege "Koshikawa teaches away from this claimed feature by stating in the purpose portion of the abstract 'to completely cover the upper side and four sides of a head slider', " the Examiner maintains that a reading of the enclosed full English translation of Koshikawa et al. (JP 03095717 A) belies the Applicants' assumption.

That is, Koshikawa et al. (JP 03095717 A) discloses that the prior art (FIGS. 7a, b) provides a shield on only *three sides* and the upper surface of the slider. Koshikawa et al. (JP 03095717 A) then states in his disclosure that the invention in his patent is to structure the device such that the *fourth* side is covered (all four sides covered), i.e., to completely cover the upper side and *four sides* of a head slider (as opposed to three sides). As pointed out by the Examiner, the embodiment of FIGS 1-2b does not show the shield is structured to fly since it has no air bearing taper to lift the shield/slider combination of the disk. If Applicants are to be believed, the embodiment of FIGS. 1-2b of Koshikawa et al. (JP 03095717 A) would be

Art Unit: 2627

rendered inoperable since the slider and shield would never lift off the disk; and assuming that it did lift off the disk, the hydrodynamic function of the slider would be rendered inoperable since the air would not be able to interact with the slider since it would be completely blocked by the shield!

Note that in the embodiments of FIGS. 3a-5 of Koshikawa et al. (JP 03095717 A), there is a air bearing taper (7) which does allow the shield to at least assist in flying the slider (3).

As per the rejections of claims 4 and 8 under 35 U.S.C. 103(a) as being unpatentable over Koshikawa et al. (JP 01-158605 A) in view of Mei et al. (US 6,611,399 B1), the Applicants opine at page 6 of the Response filed on December 10, 2007:

Applicants submit that Koshikawa, alone or in combination with Mei fails to teach or suggest the feature of a portion of the slider protruding from the shroud. Particularly, Koshikawa teaches away from this claimed feature by stating in the purpose portion of the abstract "to completely cover the upper side and four sides of a head slider."

The Examiner respectfully, but strenuously disagrees based on the facts as evidenced by Koshikawa et al. (JP 01-158605 A). That is, Koshikawa et al. (JP 01-158605 A) clearly discloses an opening suitable (i.e., being capable of) exposing a protruding portion of said slider (31) - *see FIG. 1 wherein the shield does not cover the exposed rails (12a, 12b).*

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William J. Klimowicz whose telephone number is (571) 272-7577. The examiner can normally be reached on Monday-Friday (7:30AM-6:00PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William R. Korzuch can be reached on (571) 272-7589. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number: 10/643,265

Page 12

Art Unit: 2627

Will J 19

William J. Klimowicz
Primary Examiner
Art Unit 2627

WJK